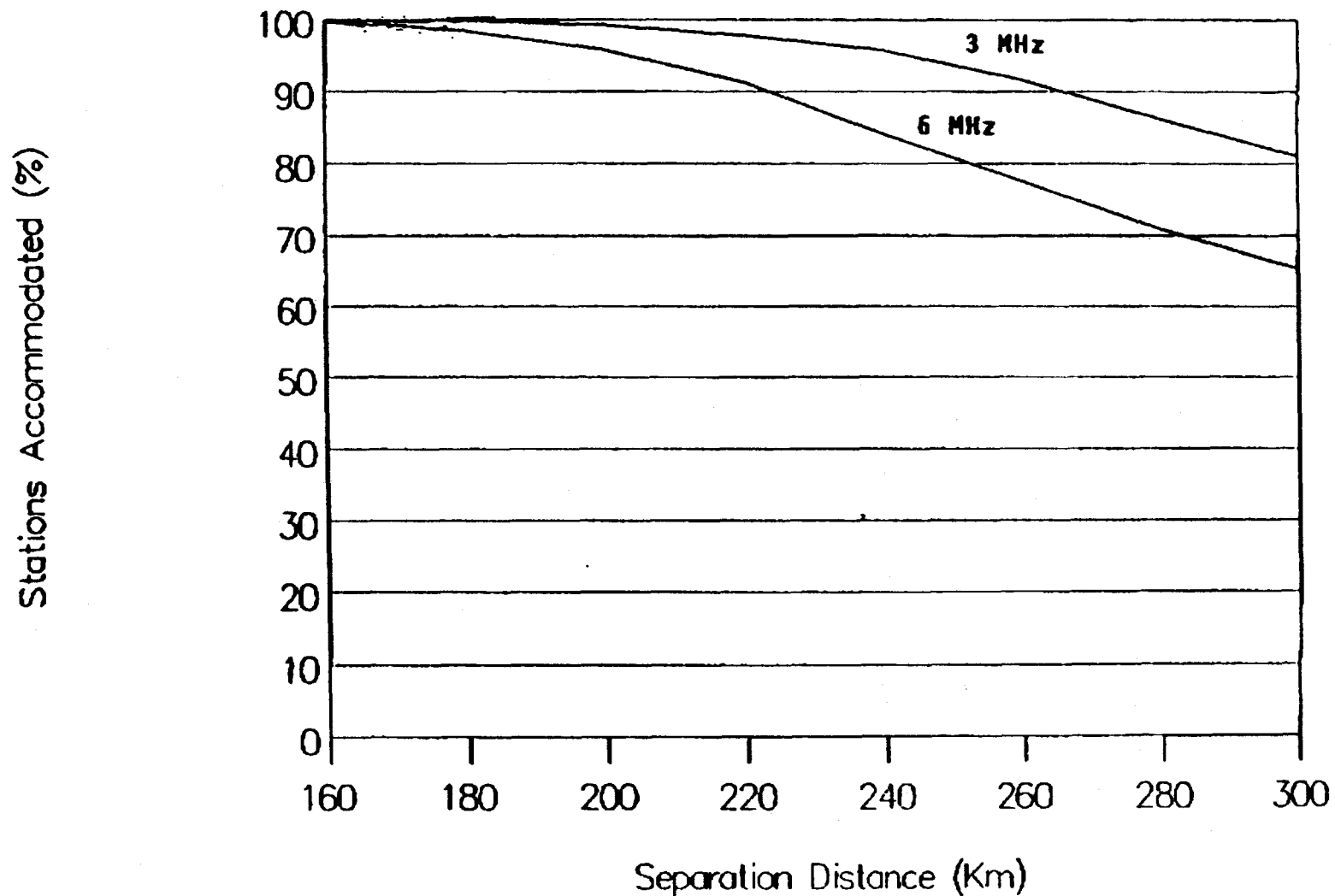


attention by the Task Force. Among the issues identified were: the availability of Canadian vacant allotments for ATV; the difference in the protection afforded for UHF taboos in the United States and Canada; and the difference in the number of categories of stations in UHF between the United States and Canada. Discussion of these and other issues will be addressed in subsequent meetings.

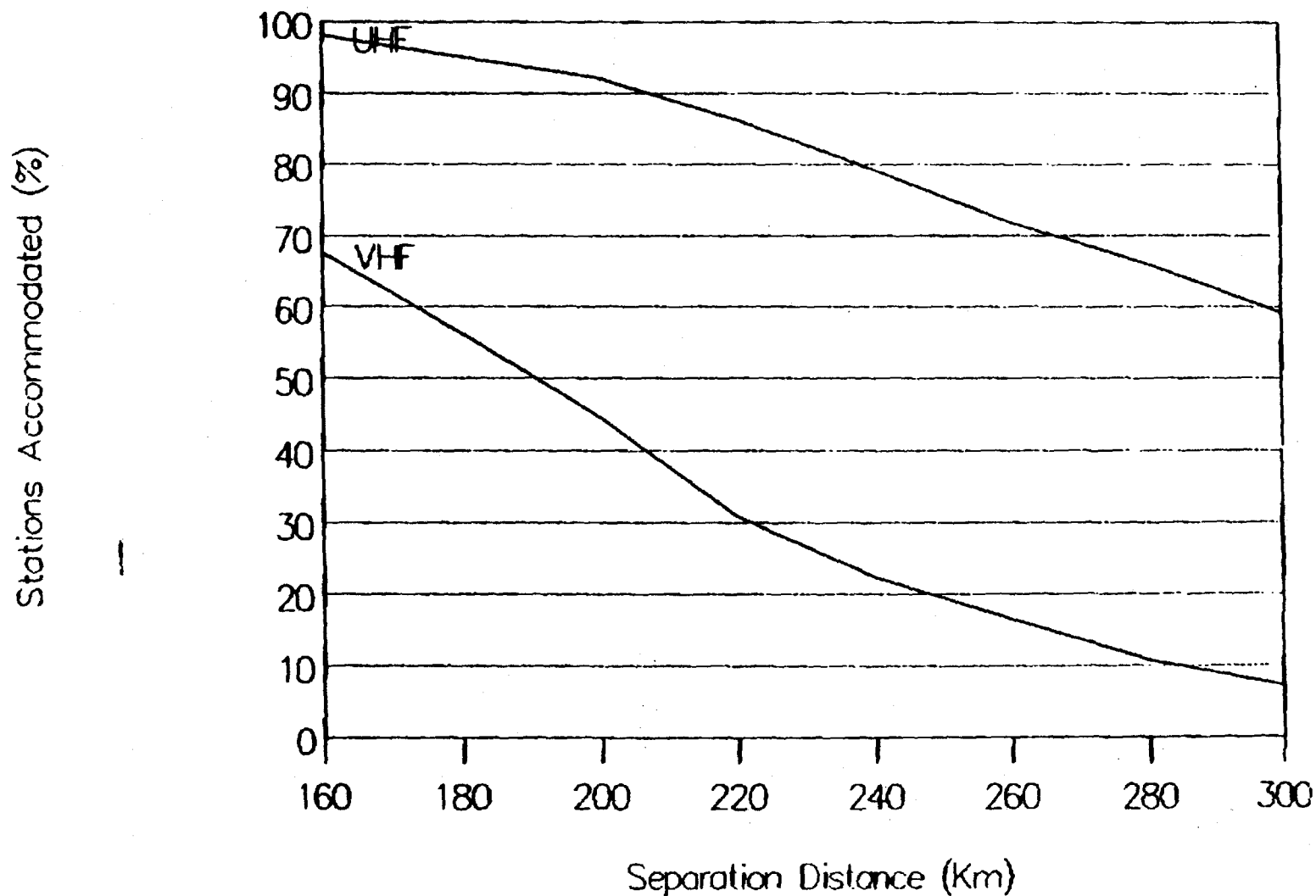
C. FUTURE ACTIVITIES

The principal future activity of SG-9 for the next reporting cycle will be to support the effort of the CABSC/FCC-AC Task Force.

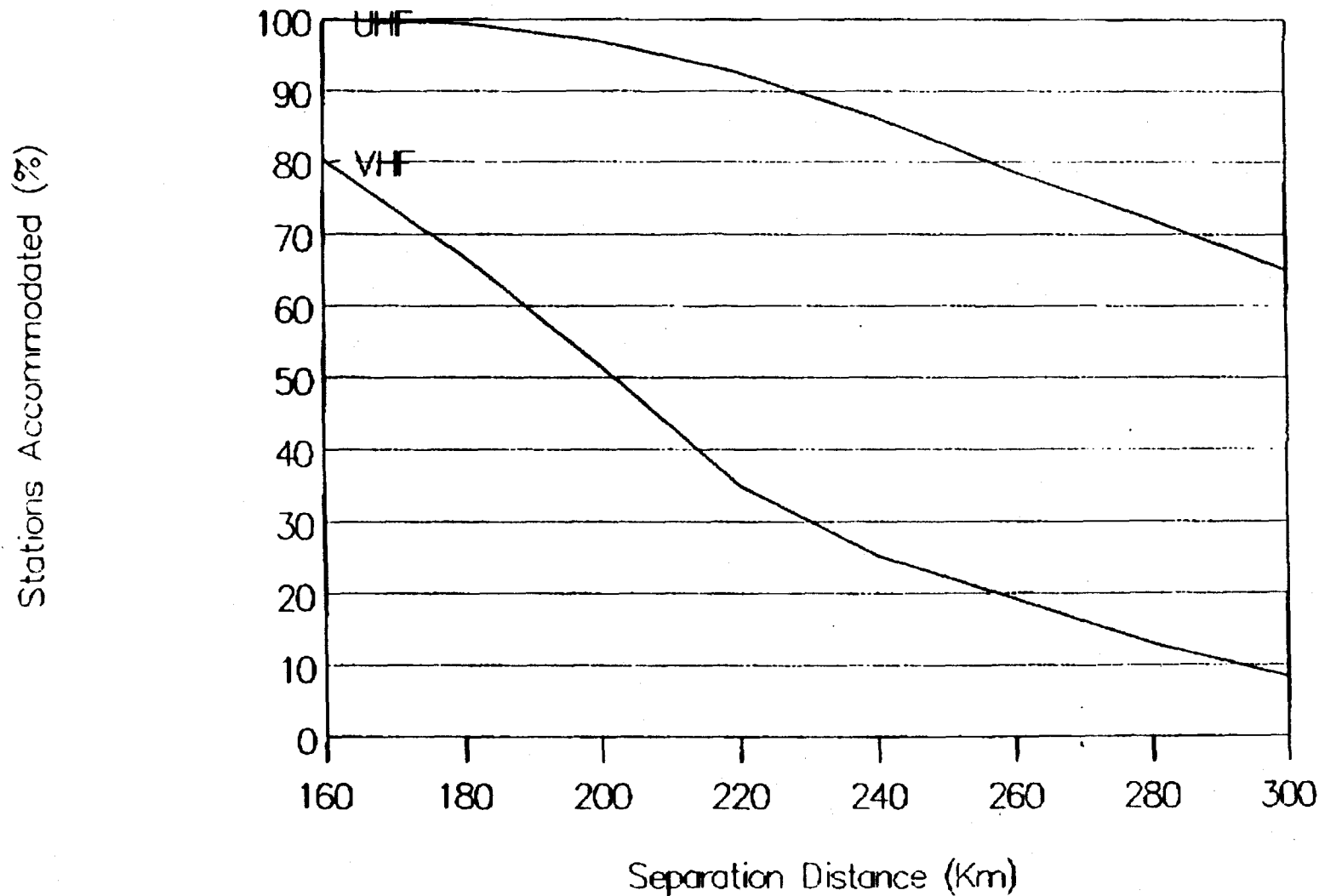
3 vs. 6 MHz Noncontiguous (No Adjacent Channel Protection)



6 MHz Noncontiguous --- Same band (Adjacent Channel Protection)



6⁰ MHz Noncontiguous -- Same band (No Adjacent Channel Protection)



**BRIEFING FOR ATV SYSTEM PROPONENTS
BY
THE SPECTRUM UTILIZATION AND ALTERNATIVES WORKING PARTY
(WORKING PARTY 3)
OF THE
PLANNING SUBCOMMITTEE
ADVISORY COMMITTEE ON ADVANCED TELEVISION SERVICE**

10:00 a.m., December 8, 1989
National Association of Broadcasters
1771 N Street, N.W.
Washington, D.C.

- I. Introductory Remarks
 - A. Responsibilities of PS/WP-3 - Dale Hatfield (Hatfield Associates)
 - B. NTSC Historical Perspective - Bob Eckert (FCC)
 - 1. FCC Specified Spacings
 - 2. UHF Taboos
 - 3. Planning Factors
 - C. Objectives for ATV - Dale Hatfield (Hatfield Associates)
 - 1. Universal Availability
 - 2. Service Area Comparable to that Provided by NTSC
- II. Spectrum Availability Considerations
 - A. Prospect for Spectrum Outside the VHF/UHF Band
 Bob O'Connor (JBTI)
 - B. Results of Spectrum Studies to Date - Victor Tawil (MST)
 - 1. Contiguous Spectrum Considering Cochannel Only
 - a. 3 MHz
 - b. 6 MHz
 - 2. Same Band Considering Cochannel Only
 - a. 3 MHz
 - b. 6 MHz

3. Either Band Considering CoChannel Only

a. 3 MHz

b. 6 MHz

4. Repeat of 1, 2 and 3 Taking Into Account Adjacent Channel Protection

C. Speculation on Impact of Taboos - Max Muterspaugh
(Thomson Consumer Electronics)

1. FCC Finding Regarding Image Taboo

2. Likely Impact of Multiple Taboos

III. Factors Affecting Required Spacing - John Watson (Westinghouse)

A. Limit of Service for the ATV Signal

1. Transmitter Power

2. Signal-to-Noise Ratio for Acceptable Service

3. Susceptibility to Interference for Other TV Stations

4. Susceptibility to Man-made Noise

5. Effect of Cumulative Interference

B. ATV to NTSC Interference - Jules Cohen (Cohen Assoc.)

1. Field/Frame Rate

2. Line Rate

3. Location of Carriers

4. Magnitude of Carriers

5. Other Modulation Characteristics

C. NTSC to ATV Interference - Ed Williams (ATTC)

1. Need for Interference Immunity to Amplitude Modulated Signals at 1.25 and 4.83 MHz from Lower Channel Edge

2. Need for Interference Immunity to Frequency Modulated Signal 0.25 MHz Below Upper Channel Edge

- D. ATV to ATV Interference - Jules Cohen (Cohen Assoc.)
 - 1. Less Sensitivity to Interference Than in B or C, Above
- E. Interference to and from Land Mobile - Al Davidson (Motorola)
- F. Propagation Factors - Victor Tawil (MST)
 - 1. Time Distribution Differences Between Current and Reduced Cochannel Spacings

IV. Development of ATV Planning Factors - Jansky/O'Connor (JBTT)

- A. Definition
- B. NTSC Assumptions
 - 1. Receive Model
 - 2. Interference Model
 - 3. Transmitter Model
- C. ATV Requirements
- D. Field Strength Requirements for Basic Service Area

G. Chairman's Report: Working Party 4

TV

Advisory Committee on Advanced Television (ATV) Service

Doc. No. _____

Date _____

PS/WP-4 Report to the Planning Subcommittee

Working Party 4 -- Alternative Media Technology and Broadcast Interface met three times in 1989, each attended by about 25 members. In our prior report to the Planning Subcommittee, we included two major documents: 1) the test plan for rating the suitability of proposed ATV systems in various alternative media; and, 2) A strawman for a universal consumer interface called the ATV multiport. These documents were intended to establish guidelines and prompt further work. After about one year of industry-wide circulation, the said documents were integrated -- either partly or in whole -- in various activities. For example, Cable Labs and ATTC now incorporate most of our conceptual test plans. Other industry organizations such as ATTC, Cable Labs, NCTA, EIA, AEA, ATSC, SS/WP-4(standards) are also studying the ideas and issues originally presented in our ATV multiport document. Consequently, PS/WP-4 reports that we have impressed to the television industry a higher level of awareness on the need for broadcast ATV to efficiently interface with alternative media.

On the week of May 8th, during the SS/WP-1 marathon meetings, PS/WP-4 requested information -- verbally and by a questionnaire -- on how ATV proponents contemplate interfacing with alternative media. Zenith provided a written response



Advisory Committee on Advanced Television (ATV) Service

Doc. No. _____

Date _____

(attached) which addresses many of our questions. Unfortunately, we did not receive the same kind of definite response from other proponents. For this reason, we defer a technical report on the expected performance of proposed ATV systems with alternative media until we hear from other proponents.

In our discussions, we recognized other issues that need further study. The more prominent ones concern the following receiver interfacing issues:

- 1) clarify the terms "ATV Receiver" and "NTSC/ATV Receiver";
- 2) specify the minimum features in the so-called ATV receiver. Some possible basic features might include an ATV multiport, a suitable frame buffer and the capability to display the intended NTSC and/or ATV attributes;
- 3) clarify the "All Channel Rule," as applied to ATV receivers in alternative media; and,
- 4) analyze the impact of terrestrial ATV implementation timetables on alternative media.

Most of our members now believe that once the FCC standardization process is completed, and if the chosen standard offers significant operational and technical improvements, then alternative media will likely carry such ATV standard. If no

Advisory Committee on Advanced Television (ATV) Service

Doc. No. _____

Date _____

improvement is perceived, then it is reasonable to expect that alternative media will consider another transmission format. However, we believe that alternative media would most likely wait for an FCC recommendation for a terrestrial ATV transmission standard before launching its own ATV transmission format. It would be disruptive if alternative media adopts an ATV standard before the FCC does, and this scenario is generally discouraged.

PS/WP-4 will continue monitoring all ATV-related work, find ways to extract interfacing information from ATV proponents, deliberate the issues and disseminate information whenever possible.

**Advisory Committee on
Advanced Television (ATV) Service**

Doc. No. _____

Date _____

ATTACHMENTS:

PS/WP4-0049	Attendance List for Feb 19 Meeting
PS/WP4-0050	Letter Dated 1/30/89 From Brian James, NCTA Stating that Test Procedures
PS/WP4-0051	Minutes of Feb 10, 1989 Meeting
PS/WP4-0052	Comments Dated Feb. 15, 1989 From Lynn Claudy, NAB, re ATV Distribution system Block diagram.
PS/WP4-0053	Alternative Media Questions for ATV System Proponents, April 6, 1989 - E. Horowitz
PS/WP4-0054	Notice and Agenda for August 23, 1989 Meeting
PS/WP4-0055	Excerpts from First Report of the EIA ATV Multiport Receiver Subcommittee
PS/WP4-0056	Minutes of Meeting, August 23, 1989
PS/WP4-0057	Attendance List of August 23, 1989 Meeting
PS/WP4-0058	Zenith Response "Alternative Media Test Plan", response to PS/WP4 Questionnaire, May 12, 1989

National Cable Television Association

Science and Technology
Department

1724 Massachusetts Avenue, Northwest
Washington, D.C. 20036
202 775-3637

January 30, 1989

Mr. Edward Horowitz
FCC ATV Advisory Committee
PS/WP-4 Chairman
Home Box Office, Inc
1100 Avenue of the Americas
New York, NY 10036

Dear Mr. Horowitz:

The test procedure for cable television tests, developed by the National Cable Television Association, Engineering Committee, HDTV Subcommittee, has been reviewed by the Cable Television Test Task Force and has been found acceptable as a working document. It is noted that modifications to the plan may be necessary as additional information regarding the characteristics of the proponent ATV systems are determined.

We recommend that this test plan be adopted by PS/WP-4 and passed on to SS/WP2 for the development of a test procedure for characterizing performance of proposed ATV systems over cable television.

Sincerely yours,



Brian James,
Chairman,
Cable Television Task Force

ATTENDANCE LIST

PS/WP-4 0049

PS/WP-4 MEETING, FEB. 10, 1989

ID	NAME	COMPANY	ADDRESS	TEL/FAX
	VIRGIL CONANAN	HBO	1114 64th Ave. New York, NY 10036	212-512-5309 212-512-5598
2.	Joe Waltrich	General Instrument	2200 Byberry Rd Hatboro PA 19040	215-674-4800 FAX 215-956-6573
3.	BERNARD J. LECHNER	CONSULTANT	98 CALSWOOD Trenton NJ 08610	609-924-7545 FAX 609-924-7547
4.	WILFRED C. FAGOT	NBC	Room 1600W 30 Rockefeller Plaza	(212) 664-4550
5.	John Berry	GWSC	250 Harbor Drive, Stamford CT	203-965-6333
6.	Walt Ciccone	AJC	230 First Stamford Pl. Stamford CT 06902-6732	(203) 325-6600 FAX (203) 325-6690
7.	Tom Mock	EIA/CEG	200 Eye St. NW Washington DC 20006	(202) 457-4975 F(202) 457-4985
8	DAVID L. HANNA	CONSULTANT - GTE SERVICE CORP/ TELUS	1203 CREST DR. COLLEGEVILLE PA 17604	(817) 656-1933
9	Ben Crutchfield	Advanced TV Test Center		703 739 3850 (-3230)
10.	Lawrence W. Robinson	Centel	12015 Lee Jackson Hwy Fairfax, VA 22033	(703) 359-6776 (703) 359-7765
1	VITO BRUGLIERA	ZENITH ELECTRONICS CORP	1000 N. MILWAUKEE AVE EVANSTON, IL 60201	(312) 391-7910 / (312) 391-726
2.	Chris Bowick	Scientific Atlanta	4011 Commonwealth Dr. Norcross, GA 30093	404 925-5106
3	Alex Best	Cox Cable	1400 Lake Haven Dr. Atlanta, GA 30317	404 843-5507
4	BRIAN JAMES	NCTA	1724 MASSACHUSETTS AVE NW WASHINGTON DC 20036	202-775-3633 202-775-3675
5	JEFFREY KRAUSS	GENERAL INSTRUMENT CORP	15200 SHADY GROVE RD #450 ROCKVILLE, MD 20850	301-258-8164 FAX 301-977-6330
6	James G. Ennis	Fletcher, Heald + Hildreth	Suite 400 1225 Connecticut Ave. NW Washington D.C. 20036	(202) 828-5700 (202) 828-5786 (fax)
7	MARCIA DeSorme	NAB	1771 N ST. N.W. DC	202-429-5383
18	Lynne Claudy	NAB	1771 N ST NW Washington, DC 20036	202-429-5340 (5543) FAX

Name	Company	Address	Tel/Fax
1. Brenda Fox	NCTA	1724 Mass Ave. NW	DC 20036 202 / 775 1355
2. Lillian Falk	NCTA	1724 MASS. AVE. N.W. WASHINGTON DC 20036	202 775-3064 3004
3. PAUL REXE	The Disney Channel		818-569-7940
4. FREDRICK RESALES	UNITED ARTIST		201-530-1900

22

**Advisory Committee on Advanced Television Service
Planning Subcommittee
FCC ATS PS/WP-4**

ALTERNATIVE MEDIA TECHNOLOGY AND BROADCAST INTERFACE

Minutes of the February 10, 1989 Meeting
(Draft)

1. The meeting was held on February 10, 1989 at the NCTA offices in Washington, D.C. and called to order by the Vice-Chairman, Paul Resch at 10:30 AM.
2. A sign-up sheet was passed around (doc. no. PS/WP-4 0049) while those present introduced themselves.
3. Paul Resch gave an introduction and explained the day's meeting agenda which covers the entire PS/WP-4 draft report (doc. no. PS/WP-4 0048) to the planning subcommittee, for Chairman Wiley's Second Interim Report to the FCC. There were no further comments about the agenda.
4. The minutes of the January 12 meeting was approved with item # 21 corrected to reflect the correct meeting date.
5. Paul Resch allowed some time for those present to review the draft of the PS/WP-4 chairman's report. Discussions followed.
6. Regarding the chairman's report, P. Resch reiterated the thought that ATV consumers are most likely to receive ATV programming from a variety of sources; thus, "cascaded defects" must be carefully evaluated in total system design. Resch also stressed the importance of providing means for conditional access in alternative media. Joe Waltrich and Jeff Kraus stated that the document does not ignore those issues; specifically, security techniques are covered in the present test plans.
7. Lynn Claudy and others questioned the transmission path shown in Fig.1 of the Chairman's report. Virgil Conanan explained that the figure should be simple enough for non-technical readers to understand the possible ways that consumer will receive ATV. It was agreed that over-simplification is dangerous, and can confuse the reader. Alex Best said that the figure is "symbolic," and illustrates what is described in this document. After some discussion, it was agreed that: 1) the signal flow lines should not be implied in the figure; 2) RF input to the ATV/NTSC receiver should be depicted; and, 3) the more correct title would be " Fig. 1 -- ATV System Functional Elements." The revised drawing is attached.

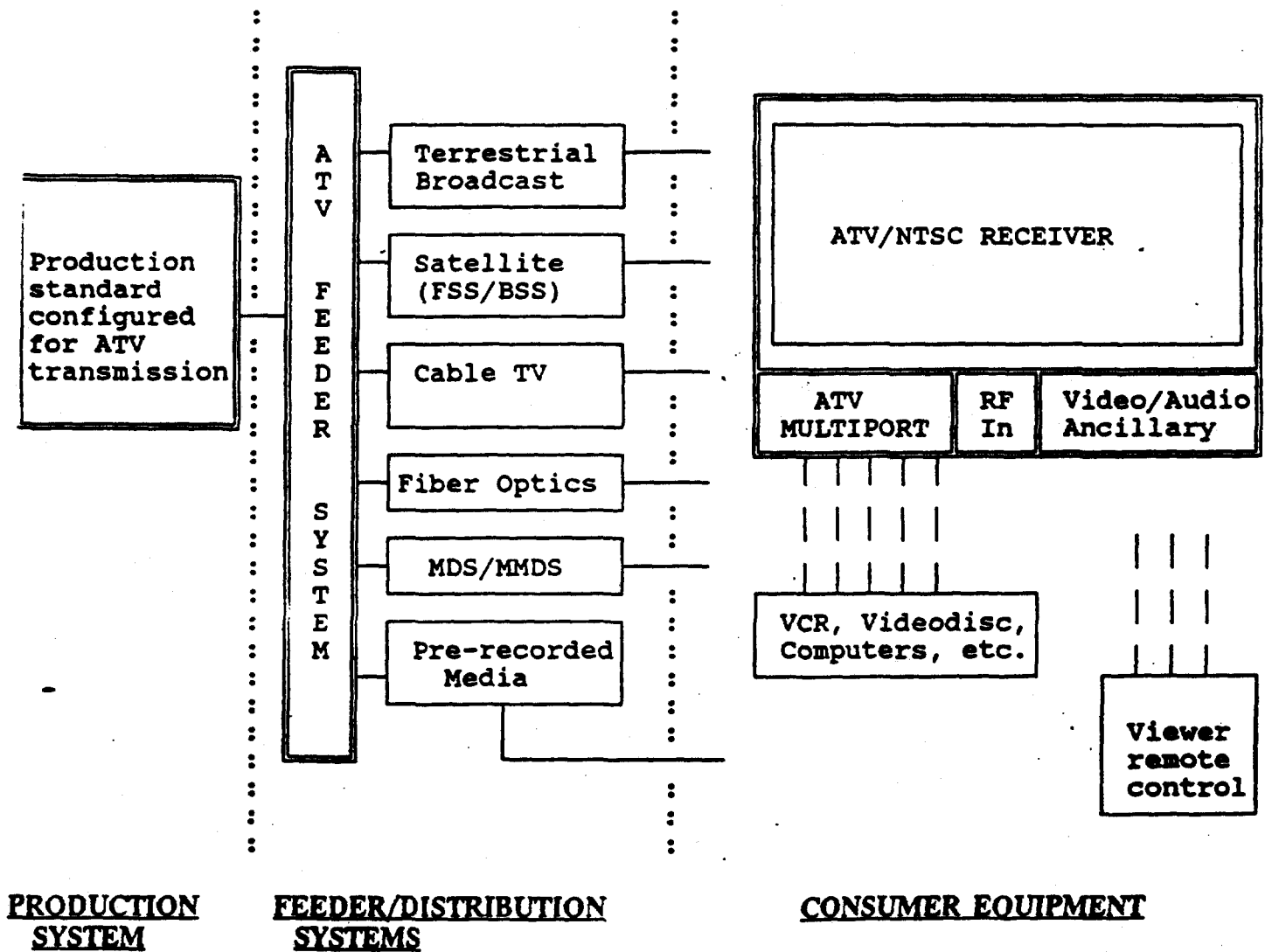
8. Walt Ciciora mentioned that in the future, cable systems are very likely to originate HDTV programming and will require HDTV production and headend equipment; thus, in addition to the ATV feeder/distribution standards, the cable industry should also be concerned with ATV production issues.
9. Bernie Lechner suggested a "bottom-up" approach in system design, where one begins at the consumer level and design systems that yield "reasonably pure" signals that appear at the home.
10. Joe Waltrich mentioned the possibility that there may be more than one standard appearing in different media.
11. Tom Mock cautioned that PS/WP-4 might have over-extended its charter when discussing -- in unnecessarily great detail -- those issues beyond the interface between broadcast and alternative media. Walt Ciciora concurred in saying that there is a danger in dwelling too much on the consumer issues instead of simply solving the more pressing broadcast and alternative media interface problems.
12. Jeff Kraus asked about the status of the chairman's report, and the procedures for amending its contents. Virgil Conanan explained that the document at hand was submitted to PS chairman Flaherty in draft form, but it is subject to change as the members and the chairman see fit. He said formal comments or dissenting opinions should be sent in writing to the chairman, making such documents part of the record, and automatically included in subsequent reports.
13. Paul Resch encouraged everyone to submit comments to Ed Horowitz no later than February 21, 1989. Having discussed the chairman's report, the topic switched to the individual test plans.
14. James Innis said we need to know the characteristics of each medium and relate those characteristics with the performance of proposed ATV systems. Once the important characteristics are identified, we should concentrate on them. Virgil Conanan agreed, and said experts have already contributed the available NTSC characteristics. However, more work need to be done for ATV characterization.
15. Bernie Lechner stated that our primary objective should be to help develop a standard, with the assumption that the FCC will choose "one" transmission standard, and the receiver manufacturers will make receivers per "that" standard. Therefore, PS working party -4 should develop test plans to ensure a transparent interface.
16. Larry Lockwood commented on the Fiber Optics Test Plan, stating that the first sentence of 2.4.1 is incorrect and should be deleted. The term "amplifier" in the second and third sentences should read "transducer/amplifier." The test plan was

accepted with the above changes.

17. Brian James, chairman of the Cable Test Plan task force submitted a letter (doc. no. PS/WP-4 0050) acknowledging the acceptability of the document.
18. There were no questions or comments regarding the Satellite Test Plan.
19. There were no questions or comments regarding the Terrestrial Microwave Test Plan.
20. There were no questions or comments regarding the Pre-recorded Media Test Plan.
21. Tom Mock reported that the EIA organized a committee to look at the ATV Multiport concept, consisting of experts in Cable, fiber optics, receivers, semiconductors, microwaves, etc. Virgil Conanan stated that the document as written is not realizable in practice, but should pique one's interest on the concepts embodied therein. Vito Brugliera reminded everyone that the document is a "strawman," and should be not be treated as a standard. Vito suggested to stamp in large, conspicuously bold letters saying "design document only."
22. Hearing no new business raised for discussion, Paul Resch opened to floor to plan the date and topics for the next meeting. Ben Crutchfield announced the System Subcommittee's plan to hold another marathon week on May 8, and said that it is unlikely that significant progress can be made before then. Thus, the date for the next meeting will not be set until the outcome of the marathon meeting is known.
23. The meeting adjourned at 12:26 PM.

FIGURE 1. ATV SYSTEM FUNCTIONAL ELEMENTS

February 10, 1989



February 15, 1989

Home Box Office, Inc.
1100 Avenue of the Americas
New York, NY 10036
Att: Mr. Ed Horowitz c/o Mr. Virgil Conanan

PS/WP-4 0052

Dear Ed:

The following comments refer to the Chairman's Report included with the PS/WP-4 Draft Report to the FCC Advisory Committee on Advanced Television Service, which was distributed at the February 10th meeting of WP-4 at NCTA.

At the meeting, several deficiencies of Figure 1, titled ATV Distribution System Block Diagram, were noted. Because of this, it was agreed that all signal flow lines would be removed from the drawing, a direct RF antenna port would be diagrammed into the figure, and the title would be changed to ATV System Functional Elements. Admittedly, after doing this there is not much of a drawing left and perhaps there is a better way to show the general relationships between elements. However, the configuration as presented can be misleading as it does not show the possibility for cascaded delivery paths. Also implied is that terrestrial broadcasting signals would be interfaced to an ATV receiver via the Multiport and not directly received at an RF antenna port. This implication is clearly inconsistent with Figure 1 in the Multiport document and has not been considered previously. Needless to say, this is something we are very interested in clarifying in the Chairman's Report.

Some of the bulleted features attributed to the Multiport also seem either premature or inappropriate for an Executive Summary of WP-4 discussions on the subject. Exception is taken to the specific statements below.

- All telecommunication services will have access to the home (via the multiport), thereby allowing those services to compete equitably.

Comment: Change "via" to "due to the flexibility afforded by".

- Once an orderly transition is established, NTSC with its inherent defects can be abandoned.

Comment: This is a premature statement, and isn't supportable at the present time.

- Paragraph beginning "Multiple aspect ratios of"

Comment: The Multiport document recognizes some of the difficulties in implementing a universal "tag" signal that would be agreed upon by all concerned. A similar statement should be made in the Executive Summary, to take note of the enormity of tackling that task.

Also, a balanced synopsis of the Multiport issues should also mention several other allied activities:

- The EIA questionnaire on Multiport distributed to receiver manufacturers
- The relationship of Multiport to EIA Standard IS-15
- The new EIA Committee chaired by Arpad Toth

It is understood that the Multiport document describes "an ideal multiport" design and that currently it is "not realizable in practice." Craig Cuttner's cover letter also says that "the document can be used as a guide" for ATV interface. With this in mind, it seems appropriate that this "straw man" concept needs to be made very clear whenever the Multiport proposal is discussed or presented. Clear language to this effect should also be included in the document itself, perhaps in Section 2.0, SCOPE, indicating the preliminary and skeletal nature of the multiport specification.

Please feel free to contact me about any of these issues.

Sincerely,


Lynn D. Claudy
Staff Engineer

cc: Michael Rau, NAB
Marcia DeSonne, NAB

RECEIVED

FEB 23 1989

E. HOROWITZ

ADVISORY COMMITTEE ON ADVANCED TELEVISION SERVICE

PLANNING SUBCOMMITTEE FCC ATS PS/WP-4

ALTERNATIVE MEDIA TECHNOLOGY AND BROADCAST INTERFACE

Name of proponent: _____
 Address: _____ Contact: _____
 _____ Tel. no.: _____

QUESTIONS FOR ATV SYSTEM PROPONENTS: MAY 8, 1989

1. Indicate the baseband format and spectrum occupancy of the proposed ATV system:
 Baseband signal bandwidth: _____ MHz
 RF signal bandwidth : _____ MHz
 NTSC compatibility _____
 Contiguous/noncontiguous _____
2. Indicate the transmission media that are optimal for the proposed ATV system:
 - a. _____ Terrestrial Broadcasting: VHF _____ UHF _____
 - b. _____ Cable Television: AM _____ FM _____
 - c. _____ Satellite Transmission: C-Band _____ Ku-Band _____ DBS _____
 - d. _____ Terrestrial Microwave: AML _____ FML _____
 - e. _____ Pre-recorded media, directly displayable to consumer device:
 - f. _____ Others :
3. For each medium checked in question no. 2, describe the ways in which the proposed ATV signal can be secured from unauthorized users.
4. For each medium checked in question no. 2, describe:
 - a. The format conversion required at each interface;
 - b. The equipment required for a transparent handoff of signals at each interface;
 - c. The types and extent of degradations that may be encountered during transfer of signals from one medium to another;
 - d. The change(s) in level of security; and,
 - e. The change(s) in interoperability, or the signal's ability to pass and execute all functions during transfer of information from one medium to another.

PS/WP440053

5. State the services that can be transmitted by the proposed ATV system:

	BROADCAST	CATV	SATELLITE	MICROWAVE	VCR
BTSC with SAP					
# of Sound cha.					
# of subcarrier					
VITS					
VIRS					
SID					
Teletext					
Videotext					
Control signals					
Others:					

6. Explain the considerations given regarding "cascaded defects" in your total system design.
7. In the future, cable systems are expected to produce commercials and local origination programming in HDTV, for subsequent interconnection with other cable systems via alternative media. The proponent is asked to consider the above scenario and comment on how the cable industry's requirement for simple and efficient interfacing between the production standard(s) and the proposed transmission standard can be achieved.
8. Describe in detail what the proponent has done on consumer requirements; specifically describe how the proponent envisions to implement the proposed ATV transmission system in a "consumer-friendly" manner and deliver "reasonably pure" ATV signals to the home. Comment on the proposed system's ability to interface with the idealized ATV multiport or the open architecture receiver approaches.
9. Describe in detail how the proposed ATV transmission standard can interface with the other proposed transmission standards.
10. The proponent is asked to comment on the latest Alternative Media Test Plan regarding the plan's viability and applicability for testing the proposed ATV transmission system.

Advanced

TV

**Advisory Committee on
Advanced Television (ATV) Service**

Doc. No. PS/WP4-0053

Date APRIL 6, 1989

To: Mr. Birney Dayton, SS/WP-1 Chairman
From: Edward Horowitz, PS/WP-4 Chairman
Date: April 6, 1989
Re: Alternative Media Questions for ATV System Proponents

In order to help our working party formulate plans and fulfill the remaining tasks assigned to us by the planning subcommittee, we need additional information from various ATV system proponents. For this reason, we are sending PS/WP-4 representatives to your "marathon meeting" scheduled for May 8, 1989, to participate and ask questions regarding Alternative Media.

Please send the attached list of items that each proponent needs to address, so that they can respond either in writing or verbally during their presentation in the marathon meeting.

Thank you for your cooperation in this matter.

cc: PS/WP-1 Members
I. Dorros
J. Flaherty

**Advisory Committee on
Advanced Television (ATV) Service**

PS/WP4-0054
Doc. No. 54
Date AUG. 23, 1983

Planning Subcommittee

Working Party 4 -- Alternative Media Technology and Broadcast Interface

=====

MEETING NOTICE

=====

***** PLEASE NOTE CHANGE OF DATE *****

WEDNESDAY AUGUST 23, 1989

PS/WP-4 will hold a meeting on ~~Tuesday, August 22, 1989~~
from 10:00 a.m. to 12:30 p.m. at:

**VIACOM CONFERENCE CENTER
Conference Room C
140 West 43rd Street
New York, NY 10036**

(Between 5th and 6th Ave., on the south side of the street)

.

AGENDA:

- 1. Review and Evaluation of FCC Advisory Committee Activities affecting Alternative media**
- 2. Definition of "ATV Receiver"**
- 3. "ATV receiver" Interface Standard**
- 4. ATV Implementation in Multi-Media Environment**